In more general consider n_1 products followed by n_2 products
- - - interbred with fabrications

So consider $f(n_1, n_2 \ldots n_m)$

we have after n_1 prod. $f_c = f_c(n_1) = \sqrt{\Omega^{(n_1)}}\sqrt{x} \cdot = f_H(n_1)$

where $\Omega^{(n_1)} = \left(1 - \varepsilon^{n} + \varepsilon^{n}/x\right)$

after 1st refolder

$f_c \to f_c'(n_1) = F(1) f_c(n_1)$, $f_H'(n_1) = \sqrt{x}$.

after n_2 products

$$f_c \to f_c(n_1, n_2) = \sqrt{\Omega^{(n_2, n_1)}}\, f_c'(n_1)\left[1 + \frac{1 - \sqrt{\frac{\sqrt{x}}{f_c'(n_1)}}}{\frac{1}{\sqrt{x}\cdot f_c'(n_1)} - 1}\left(\Omega^{(n_2,n_1)} - 1\right)\right]$$

where $\Omega^{(n_2, n_1)} = \left(1 - \varepsilon^{n_2} + \frac{\varepsilon^{n_2}}{f_c'(n_1)\sqrt{x}}\right) \Big/ f_c'(n_1)\sqrt{x}$.

then $f_c(n_1, n_2, n_3) = \sqrt{\Omega^{(n_3, n_2)}} \cdot f_c'(n_1, n_2)\left[1 - \frac{1 - \sqrt{\frac{\sqrt{x}}{f_c'(n_1, n_2)}}}{\frac{1}{\sqrt{x}\, f_c'(n_1, n_2)} - 1} \times \left(\Omega^{(n_3, n_2)} - 1\right)\right.$

where $f_c'(n_1, n_2) = F(2) f_c(n_1, n_2)$

and $\Omega^{(n_3, n_2)} = \left(1 - \varepsilon^{n_3} + \frac{\varepsilon^{n_3}}{\sqrt{x}\cdot f_c'(n_1, n_2)}\right) \Big/ \sqrt{x}\cdot f_c'(n_1, n_2)$

In general for Probability of hard Core C after sequence
n_1 prod., fals.; n_2 prod; fals; .... n_m prod. after $m-1$ fabrications...

$$P_c(n_1, n_2 \dots n_m)$$

$$= \sqrt{\Omega^{(n_m)}}\ P_c'(n_1, n_2 \dots n_{m-1}) \times \left[1 - \frac{1 - \sqrt{\frac{x}{P_c'(n_1 \dots n_{m-1})}}}{\frac{1}{\sqrt{x}\, P_c'(n_1 \dots n_{m-1})} - 1} \times \left(\Omega^{(n_m)} - 1 \right) \right]$$

where $P_c'(n_1 \dots n_{m-1}) = F(m-1) \times P_c(n_1, n_2 \dots n_{m-1})$

and $\Omega^{(n_m)} = \left(1 - \varepsilon^{n_m} + \frac{\varepsilon^{n_m}}{\sqrt{x}\, P_c'(n_1 \dots n_{m-1})} \right)^{-1} \Big/ \sqrt{x}\, P_c'(n_1 \dots n_{m-1})$

and $P_c(n_1) = \sqrt{\Omega^{(n_1)} \cdot x}$

$$\Omega^{(n_1)} = \left(1 - \varepsilon^{n_1} + \frac{\varepsilon^{n_1}}{x} \right)^{-1} \Big/ x.$$

$$F(m) = \frac{1}{1 + \exp(m - m_0)^2}$$

$x = P(T/2)$
$\varepsilon = P(X/\sim T)$

January 31, 1975

ARGONNE NATIONAL LABORATORY

Dear Prof. Redhead —

I was interested to read your review of Scheibe's book in The British Jour. Phil. Sci. Apparently you found Scheibe's proof of the consistency of Q.M. and weak reduction unconvincing. The attached paper makes the same claim. In addition I claim there that what Scheibe calls strong reduction is <u>not</u> necessary (and, I would add, untrue.) I have yet to see any convincing argument for the need of <u>strong</u> reduction. Perhaps you know of one I may have missed?

Sincerely Peter Mittelstaedt

Brown Tucson, Arizona
(Wes. Salmon)

Consider $\Psi(t) = U(t) \sum C_n \psi_n$

$= C_n a_{mn} u_m e^{-iE_m t}$ where $\psi_m = a_{mn} \phi_m$

$H u_m = E_m u_m$.

then $\langle \Psi(t) | F | \Psi(t) \rangle$

$= \frac{1}{T} C_i^* C_n a_{ji}^* a_{mn} \int_0^T \langle u_j | F | u_m \rangle \exp(i(E_j - E_m)t)\, dt$

~~now for $E_j \neq E_m$.~~

why ??) Now suppose $a_{mn} a_{ji}^* = 0$ if $n \neq i$ and $j = m$.

then terms with $n \neq i$ and $j = m$ vanish by the condition.

while terms with $n \neq i$ and $j \neq m$ vanish from the t-integration

and we are left only with terms for which $i = n$ and $j = m$

For $\langle \quad \rangle \to \sum |C_i|^2 |a_{ji}|^2 \int \langle u_j | F | u_j \rangle$

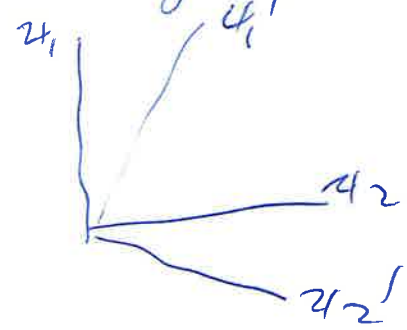
Argument fails however if $P \to F(t)$

where $\langle u_j | F | u_m \rangle \to \exp(-i(E_i - E_m)t)$ × t-independent term

Prob that $W = \lambda_1 P_1 + \lambda_2 P_2$ is unique
if P_1 and P_2 are orthogonal
projectors

Thus suppose $W = \lambda_1 P_1 + \lambda_2 P_2 = \lambda_1' P_1' + \lambda_2' P_2'$

then $\lambda_1, \lambda_2, \lambda_1', \lambda_2'$ are all eigenvals of W
with eigenvectors u_1, u_2, u_1', u_2' the ranges of P_1, P_2, P_1', P_2'



e.g. $W u_1 = (\lambda_1 P_1 + \lambda_2 P_2) P_1 u_1$

$= \lambda_1 P_1 u_1 + 0$

$= \lambda_1 u_1$ etc

Here W has 4 eigenvals which is impossible for a 2-dimensional space unless $\lambda_1 = \lambda_1'$, $\lambda_2 = \lambda_2'$, $P_1 = P_1'$, $P_2 = P_2'$

Hence (non-degeneracy) + (orthog.) $\rightarrow$ uniqueness

clearly degen $\rightarrow$ non-unique

cf. d'Espagnat's Theorem

If representation of W is not unique
then eigenvectors u_1, u_2' are linear combinations
of u_1, u_2. i.e. non-unique $\rightarrow$ linear comb.

Then can show: non-uniq. $\rightarrow$ (degeneracy) or (non-orthog)

Comments on S's 'relativistic' interpolation & Q.M.

(1) Major objections to S's interpolations were:—

(a) Spreading of wave packet

(2) Use of configuration space rather than typical mod for the N-particle problem

(2) Implications of 2nd quantization for the 'relativistic' interpolation of S. Eq. should be carefully evaluated, cf. e.g. the attitudes adopted by

Eqn. Heisenberg
March.
Dirac, Pauli, Weisskopf
Rosenfeld.

Economic localization papers in this context
(Newton, Wigner & M.P.)

(3) check Stückelberg's work on unitary field theories in late 1940's. (some similarity to S's ideas)

(4) check §s publications on QR ca. mid. 1920's
underlie his formulation of the "Copenhagen

(5) Cf S. until early, ~~late~~ most apparently de Broglie

(6) Evaluate Fine's critique of Kochen
- Specker (B. J. P. S. 1973)